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perhaps much older. At this age juvenal characters should have, at least partially, disappeared. I am reluctant to adopt the color phase theory unless it can be proven; but it must be borne in mind that at least two other species of this family are known to have very distinct color phases.

On the strength of all the above evidence, it seems fair to assume, for the present and until further evidence is produced, that all of the specimens of *Catharacta* taken north of the Equator in the Pacific Ocean are referable to *C. chilensis* (Bonaparte). These specimens, so far as known to the writer are: One in the American Museum of Natural History, New York (no. 46093), taken off Monterey many years ago, before 1853, by or for Nicholas Pike; one in the Museum of Comparative Zoology in Cambridge (Bangs coll. 13927), taken in Sagami Sea, Japan, August 23, 1903; one in the California Academy of Sciences, San Francisco (no. 10920) and two in the Museum of Vertebrate Zoology, Berkeley (nos. 17758, 17759), all three taken by Rollo H. Beck, in Monterey Bay, on August 7, 1907, August 4 and September 21, 1910, respectively; and three taken by Stanton Warburton, Jr., off the coasts of Washington and Vancouver Island, on June 28 and 30, 1917. Mr. Joseph Mailliard has very kindly sent me a full and accurate description of the Academy bird, and I understand that Mr. Warburton's birds were identified by Mr. Harry S. Swarth as of the same species as those in the Museum of Vertebrate Zoology. Apparently they are all of the same species. This materially extends the range of the Chilean Skua, *Catharacta chilensis* (Bonaparte), and adds this species to the North American list.

Taunton, Massachusetts, March 18, 1921.

NESTING OF THE STEPHENS FOX SPARROW

By WRIGHT M. PIERCE

WITH THREE PHOTOS BY THE AUTHOR

THERE seem to be no published records of the nesting of the Stephens Fox Sparrow (*Passerella iliaca stephensi*), nor a description of the eggs. While sets of eggs of this bird may have been collected by others, I, myself, had not enjoyed that experience, and I was anxious to find a nest.

The past few seasons I, with different companions, have been making regular collecting trips to Big Bear Lake, San Bernardino Mountains, southern California, one of the principal homes of the Stephens Fox Sparrow; but search for sets had always been without results prior to 1919. We had spent much time scouring through the patches of mountain misery (*Ceanothus*) which grows quite thick, from two to four feet high, and is covered with numerous thorns; and also through the chinquapin, a scraggy, wiry bush which grows to about the same height and is very difficult to penetrate. While the birds themselves were quite abundant in favored localities, such as the brush-covered canyons and little flats on the hills about the lake, the nearest we came to finding a nest was an encounter with young just out and not yet able to fly. Naturally we arrived at the conclusion, wrongly as we later discovered, that the birds must nest only on

the ground. We also surmised that probably they were close sitters or else left the nest long before the collector approached near, or that perhaps they nested much earlier in the spring than the time when we were able to go to their nesting grounds.

The spring of 1919, two fellow Club members, Gordon Nicholson, of Upland, and S. Rich, of Claremont, accompanied me to Big Bear on May 30, wishing; but I must say not very hopefully, that we would find the nest of the Stephens Fox Sparrow. Anyway we would almost certainly find such nests as the Wright Flycatcher and Green-tailed Towhee in our hunting, so that our work would not be without some results.

On the afternoon of May 31 we started to prospect carefully through a likely looking patch of mountain misery, oftentimes called buckthorn, near the lake shore; and to prospect means to examine every bush carefully. Stephens Fox Sparrows and Green-tailed Towhees were singing, Wright Flycatchers twitter-



Fig. 16. STEPHENS FOX SPARROW APPROACHING NEST; BIG BEAR LAKE, SAN BERNARDINO MOUNTAINS.

ing, Calliope Hummingbirds darting here and there, with an occasional Ashy Kinglet and many Audubon Warblers busy in the pines above us. We had not gone far until we kicked out a rather young fox sparrow from the brush, and then another. The parents were near at hand and played the broken-wing trick to perfection in their attempts to coax us away, all the while uttering their metallic "chip". A little farther on, while I was examining a nest of the Wright Flycatcher, Nicholson shouted, "I have a Stephens on a nest"; so to him goes the credit of our first nest. This was three feet up in a crotch of a buckthorn bush. One of the parents was sitting; in fact the bird sat so close that she (it may have been the male) did not flush until I was about a foot from her. The nest contained one fresh egg, which we left, hoping for a complete set. Luck was with us and the nest with three eggs was collected June 2. This nest was poorly hidden, being comparatively easy to see from the edge of the brush. Since

all the nests that we found are so similar, a general description covering them all will be given later on in this article.

The eggs of this first set measure in millimeters as follows: 21.5x16.5, 21.6x16.5, and 21.x16.5. These eggs are very nearly equal ended, with a pale glaucous blue ground color, and they are boldly marked. One is rather heavily spotted and blotched with cameo brown and vinaceous russet, the darker spots being chocolate color. There are distinct under tints of plumbago gray, making it one of the most beautiful eggs of this species that I have ever seen. The markings are about evenly distributed over the whole egg. The second egg is spotted and only slightly blotched or flecked with cameo brown and vinaceous russet. The



Fig. 17. STEPHENS FOX SPARROW ON NEST; BIG BEAR LAKE, SAN BERNARDINO MOUNTAINS.

darker markings are chocolate as in the other egg. There are a very few under tints of plumbago gray. This egg is heavier marked on the large end. The other egg is uniformly spotted with cameo brown and vinaceous russet; a few of the spots are chocolate. On this egg there are also fewer of the undertints of plumbago gray. These eggs are slightly glossy. Color terms here used are taken from Ridgway's *Color Standards* by matching.

The following day, June 1, while working my way up a little canyon, the sides of which were thickly covered with low buckthorn, about a mile from the lake shore, I found set number two. This nest was in a low buckthorn bush, only about six inches from the ground, and was discovered by seeing the bird sitting

on the nest. This bird also sat closely, not flushing until I nearly touched her. It then hopped off through the brush, uttering at times the usual Fox Sparrow chirp. This nest also held three eggs, with a trace of incubation. This set was sent to Mr. R. C. Harlow of State College, Pennsylvania, who sends me the following description: "In size they run .95x.69, .92x.66, .97x.69—measurements in inches. In color they are pale greenish white, the largest egg being almost a faint greenish blue, (chiefly) flecked, dotted and blotched with reddish brown and burnt umber, the markings tending to be heavier around the larger end, where they almost obscure the ground color. In one egg the markings at the larger end are practically solid."

A third nest, containing two infertile eggs and one young, was found June 2 by S. Rich. This nest was one and one-half feet up in a buckthorn bush about one-half mile from the lake shore, and was similar in construction to the others. However, the eggs are quite different in that they are perceptibly smaller than

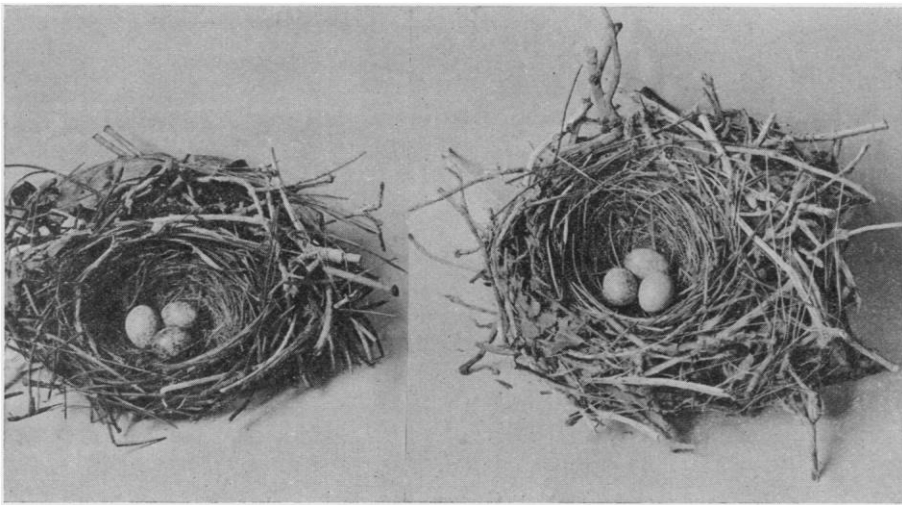


Fig. 18. NESTS AND EGGS OF STEPHENS FOX SPARROW; IN THE COLLECTION OF WRIGHT M. PIERCE.

the average. These eggs are now in the collection of Mr. K. L. Skinner, of Weybridge, England, who has very kindly sent me the following description of them: "The two eggs are both very blunt with very little small end. One egg is thickly marked, the other very lightly by comparison. In the light one the ground color is very pale greenish and both eggs when held to the light exhibit a greenish tint. In the light one the blotches are drawn together at the larger end, not in the form of a zone, but in an irregular cap at the extremity. I can only describe the markings as much like the commonest type of song sparrow but they are a little smaller and more distinct. Both eggs carry a good gloss. Light egg measures 20.x16.5 mm., the other 20.25x17. mm."

The season of 1920 we went after sets of the Stephens Fox Sparrow again. Our first trip was in the San Gabriel Mountains, back of Mount Baldy in Swartout Canyon. Here, although the birds were only fairly common, we had unusually good luck, finding three nests on May 31. Two were on the ground under buckthorn, and another about one foot up, also in buckthorn. Two of the nests

contained three eggs each, and the other but two. Gordon Nicholson, Luther Little and I had equally good success in finding these sets.

The first set of three measures in millimeters: 22.x17.5, 23.x17.5, and 23.x18. The eggs of this set are rather blunt and equal ended. The ground color is dull glaucous blue, one rather heavily clouded with chestnut, one less so, and the third one still less; each egg more heavily marked on the larger end. Each egg is only slightly glossy. The second set of three measures: 22.x17.5, 21.x17., 22.5x18. The ground color in these eggs is also dull glaucous blue. Two eggs are heavily clouded with russet all over, only slightly more so on larger end; the other egg is evenly clouded but to a lesser degree. These eggs are also rather blunt and equal ended, with only a slight gloss. The two eggs of the third set are of the long type, being much more pointed on the little end than are any eggs of the other sets. Their ground color is pale dull glaucous blue, uniformly marked with fine spots and flecks of closely blended vinaceous russet and light purplish gray, so as to almost obscure the ground tint. They measure 22.5x15., 23.x15.5. These eggs exhibit no gloss. The birds of each of these three nests sat very close, and the two nests that were on the ground were extremely difficult to locate.

A week at Big Bear later in the season gave us one nest, also with three eggs. This was the hardest nest to locate, I believe, that I ever went after, as it was on the ground under a tangle of buckthorn. Even after the bird flushed right under my feet, I did not find the nest until I had carefully hunted for about thirty minutes, although it was in a comparatively small patch of buckthorn. These eggs were fresh and were found June 6. They measure: 23.5x18., 23.5x17.5, and 21.5x17.5. In color they are pale dull glaucous blue, marbled all over with chestnut. The markings are almost clouded on the larger end of two of them, while the third is much less heavily marked. These eggs are also blunt and nearly equal ended, and have a very slight gloss.

The only other nest that we found with eggs, and these on the point of hatching, was also at Big Bear. This nest was in plain view; in fact I saw it when over thirty yards away. It was in an opening in the center of a broken bush of buckthorn on a side-hill. This bird was very obliging and it was here that I obtained the photographs that illustrate this article. Possibly her unusual tameness was due to the heavy incubation of the eggs.

The nests are all very similar, so that one description will do for all we found. In size they average, outside depth, 4.5 inches; inside depth, 1.75; outside diameter, 6; inside, 3. Nests are composed of coarse sticks and pine needles, with some fine twigs and weed bark, lined with grass, weed bark, and, at times, mammal fur. The nests on the ground were usually less well made, with more pine needles and leaves, rather than coarse sticks.

To sum up, it will be noted that the eggs we found, with the exception of one set, show only slight variation in size and shape. They are somewhat similar in markings. However, I have seen enough sets to say that a large series would undoubtedly show considerable variation in coloration, but I do not think that there would be much variation in general shape and ground color. The birds nest, so far as we have found, either on the ground or up in buckthorn bushes. I believe they build more often on the ground, where the nests are very hard to locate, especially, if they are placed under a thick mat of tangled buckthorn. At times they seem to choose the most open sort of location. They just seem to be where they are! My experience indicates that the birds are very close sitters, and three seems to be the usual clutch of eggs.

I wish here to thank Mr. K. L. Skinner for his kindness in sending me a description of the set of eggs in his collection, Mr. R. C. Harlow, who has kindly helped me in the same way, and Mr. A. O. Treganza for the loan of specimens.

Claremont, California, February 7, 1921.

WEIGHTS AND PLUMAGE OF DUCKS IN THE RIO GRANDE VALLEY

By ALDO LEOPOLD

SINCE 1917 I have recorded the weights of about 300 ducks of fifteen species killed during the open season in the Rio Grande Valley between Socorro and Albuquerque, New Mexico. These weights, all plotted as colored points (one color representing each species) on coördinates of time in weeks and weight in pounds, respectively, give an interesting one-page graphic record of seasonal weight changes, maximum and minimum weights, comparative weights of species, seasonal abundance of species, and comparative abundance of species. It is impracticable to publish the colored graph, but the following data obtained from the graph, and questions and conclusions suggested by it, may be of interest.¹

TABLE OF WEIGHTS IN POUNDS

Species	No.	Maximum		Minimum	
		Extreme	General	Extreme ²	General
Mallard	101	3.30	3.00	1.75	2.00
Black Mallard	12	2.80	.....	2.20	.....
Pintail	33	2.37	2.10	1.30	1.50
Widgeon	33	2.63(?)	1.75	1.15	1.30
Gadwall	9	2.00	1.90	1.13	.....
Green-wing Teal	42	.82	.....	.50	.....
Blue-wing Teal	13	.90	.....	.56	.....
Spoonbill	37	1.69	1.50	.95	1.00
Canvas-back	7	2.63	.....	1.90	.....
Redhead	3	2.05	.....	1.50	.....
Bluebill (both sp.).....	4	1.50	.....	1.13	.....
Bufflehead	4	1.00	.....	.75	.....
Ruddy Duck	4	1.13	.....	.90	.....

The graph shows that Mallards attain their greatest weight in early November and decline slightly but steadily during December and January. Pintails stay about stationary, while Gadwalls and especially Widgeons increase steadily throughout the season. I know of nothing in their respective food habits to account for this. It suggests the possibility that weight may increase with maturity of plumage, more or less independently of food supply and food habits, it being a manifest fact, known to every hunter, that Mallards in this region attain nearly full maturity of plumage in November, while the other three do not show full feather until the middle of the winter. Spoonbills and Teals seem to decrease in

¹Some preliminary "Notes on the Weights and Plumage of Ducks in New Mexico" were published in the Condor, XXI, May, 1919, pp. 128-129.

²These extreme minimum weights should be accepted with reservations because of the possibility of the figures containing crippled birds. No cripples were knowingly included, but occasionally even an active and apparently healthy bird has sustained wounds which may have affected its weight.